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PRELIMINARY RESEARCH NOTE

THE OCCURRENCE OF THE APPARENTLY RARE LIBELLULID DRAGONFLY, *NESCIOTHEMIS NIGERIENSIS* GAMBLES, 1966, IN ZARIA NIGERIA

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The discovery of three colonies of the libellulid *Nesciothemis nigeriensis* Gambles in the region of Zaria, Nigeria, is reported. The species was known hitherto only through the type specimen which was taken in 1961, much further south in Nigeria. The males of *N. nigeriensis* are strongly territorial at the waterside; females are seen only occasionally by water. The preferred habitat seems to be marshy lake margins having a good growth of emergent grasses, especially *Echinochloa*. Both sexes roost in tall grass, mostly away from the water.

GAMBLES (1966) described a new species of *Nesciothemis* Longfield (Odonata: *Libellulidae*) from a single male specimen which he took at Agulu Lake, Awka, in East Central State, Nigeria in 1961. The species, *N. nigeriensis*, remained known only from the type specimen until 29 June, 1971, when we took a mature male at about 5.30 pm local time at University Farm Lake*, Samaru, Zaria in North Central State, Nigeria. This specimen was determined by Gambles. Figure 1 is a photograph of a living adult male of *N. nigeriensis.*

On 29 August, 1971, we found a flourishing colony of *N. nigeriensis* at Samaru Lake**, which is about 1.3 miles from University Farm Lake. One of these male specimens was dissected in order to compare it with Gambles' original figures and description. It was found that our specimens agreed very closely with

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* previously called N.T.C. Lake.

** also called Bomo Lake, from the nearby village of the same name.

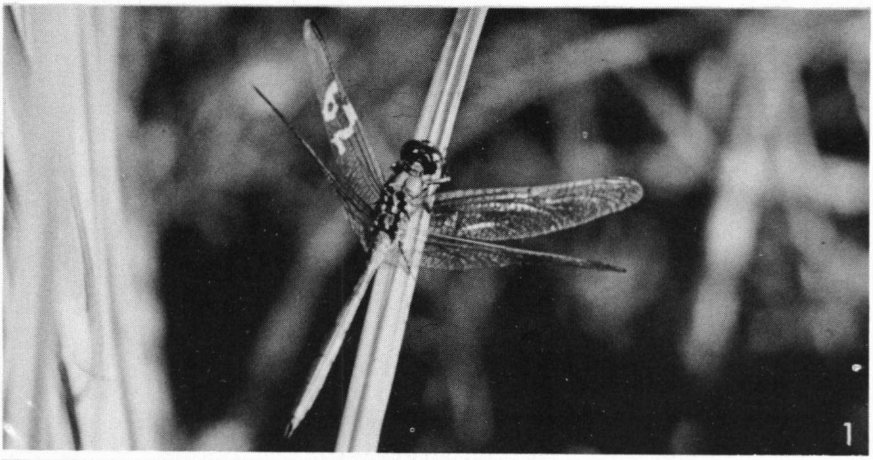
Gambles' account and that the penis and hamules were identical to those figured for the holotype. A further male specimen was taken at University Farm Lake, also on 29 August. At Samaru Lake on 5 September, numerous males were seen, and also several specimens of an unfamiliar female libellulid. It very soon became apparent that the latter were the hitherto unrecognised female of *N. nigeriensis* as they were seen *in copula* with the males of this species. Mating did not appear to be preceded by any obvious courtship, and it lasted for only a very brief time. Two females were seen ovipositing after mating had been accomplished. It has been realised subsequently that a previously undetermined female libellulid taken by J.C. Deeming at University Farm Lake on 11 June, 1971, and another of the same species caught by him at Samaru Lake on 21 June, 1971, are the first recorded captures of a female *N. nigeriensis*. These specimens are in the collection of the Institute for Agricultural Research, Ahmadu Bello University, Samaru, Zaria, of which Mr Deeming is Curator.

Both Samaru Lake and University Farm Lake are formed by damming a small stream running through a very shallow and wide valley: consequently both lakes are shallow, and although permanent, they diminish considerably in the dry season. In the wet season, from June to October, the margins of both lakes are marshy, flooded areas with much emergent vegetation, especially grasses and sedges (Fig. 2).

When *N. nigeriensis* was discovered at Samaru Lake it was decided to make a detailed study of the colony. A survey of the lake perimeter by boat and on foot showed that the colony was, in fact, divided into two distinct sub-colonies on opposite sides of the lake. The two sub-colonies were, in the season of 1971, separated from each other by long stretches of lake side. The distribution of the two sub-colonies at the lake was positively correlated with flooded, marshy margins having a growth of medium sized emergent grasses, especially *Echinochloa* sp. *N. nigeriensis* was largely absent from the steep sides of the dam and from the lake margin in areas where taller or denser grasses occurred. Although, up to the end of October 1971, over one hundred males were marked, only one was observed to move to another sub-colony area.

The adult males are distinctly territorial at the water side and over the flooded lake margins, but show little general inclination to fly over open water. They have been observed to arrive at water between 10.10 and 10.40 am local time, which is very much later than most other species of Odonata in the same habitat. The only other species which regularly takes up its position at water as

Figs. 1-3. *Nesciothemis nigeriensis* Gambles and its habitat: (1) Adult male (Samaru Lake, Zaria, Nigeria; July, 1972); – (2) Samaru Lake, Zaria, Nigeria – typical habitat of the species in the Zaria area. The emergent grasses in the right foreground and middle distance are mainly *Echinochloa* sp. (September, 1971); – (3) Typical roosting site of the species at Samaru Lake. The tall grasses are mainly *Andropogon schirensis* (September, 1971).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late in the day as *N. nigeriensis* is the common libellulid *Palpopleura deceptor* (Calvert). On separate occasions, three male specimens have been seen to leave their perch in their defended territory and fly directly over open water, where they appeared to drink by dipping their heads on to the water surface. Similar behaviour has been observed by MILLER (1964) for *Ictinogomphus ferox* (Rambur). Most of their active periods near the lake side are spent in grasses 3-7 feet high growing in shallow water within about 15 yards of the open water. On days when the weather is hot and sunny, the males start leaving the water from about 3.0 pm onwards and move to the adjacent roosting sites. Most of the roosting sites are away from water, but some males roost right at the water's edge. The roosting sites are typically areas of tall grass *Andropogon schirensis* Hochst., which frequently grow to 10 feet high, close to trees and bushes (Fig. 3). Both sexes roost in the sites, but males are always heavily predominant, as they are at water. After a preliminary period spent sunning and feeding at the roosting sites, both sexes secrete themselves deeply amongst the dense grasses between 5.30 and 6.0 pm. On 29 September, a marked male mated with an unmarked female at one of the roosting sites. The copulation occurred at 4.45 pm and lasted 15 seconds. This same male showed definite territorial behaviour after mating, and defended its perch from another marked male which was at the same roosting site.

Our preliminary study by means of capture-recapture at Samaru Lake, indicates that at least 200 males were probably present in the two sub-colonies in September and October, 1971, but as sampling did not appear to be random it is difficult to estimate the population more precisely at present. One hundred and nineteen males and nine females were marked with unique numbers. Only eight or nine other females were seen. The numbers captured declined throughout October and the last specimen was seen on the 21st.

Samaru and University Farm Lakes have been well frequented by entomologists, including some odonatologists, for several years. As *N. nigeriensis* is such an easily recognised insect in the field and is fairly large (about the size of the common African libellulid *Orthetrum trinacria* (Sélys)) it seems, at first sight, as if it ought to have been recorded earlier. P.H. WARD (personal communication) states that although he collected extensively both at Samaru and University Farm Lakes during the 1970 rainy season, he did not see any *N. nigeriensis* at all. J.C. Deeming has also collected at Samaru and University Farm Lakes for several years, and until he took the female specimen mentioned earlier, had never seen *N. nigeriensis*. Furthermore, some fairly large collections made by students from Ahmadu Bello University do not contain this species. However, as the present Samaru Lake colony is restricted to certain parts of the lake and as smaller numbers have been seen at University Farm Lake it is just possible that the species has simply been overlooked, despite the fact that it is perhaps the most strikingly coloured dragonfly in the area. As its status elsewhere in Nigeria is unknown, it is possible that *N. nigeriensis* has only recently extended its range to Zaria, or that colonies are particularly ephemeral in this species, or that its colonies undergo large periodic fluctuations in numbers. The species is again very abundant at Samaru Lake in the present 1972 rainy season. We have recently (July, 1972) located another colony near Giwa, about 22 miles north-west of Zaria. This latest colony is situated at a large, permanent fadama (river flood-plain) pool. It is hoped that continued observations at the Zaria lakes in the 1972 and 1973 rainy seasons will throw some light on this interesting distributional problem. It is hoped to publish a detailed account of the ecology and behaviour of *N. nigeriensis* in due course.

REFERENCES

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